



UNITED STATES PATENT AND TRADEMARK OFFICE

cal

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,199	01/30/2004	Elizabeth Downing	080437.51702US	5723
23911	7590	08/08/2005	EXAMINER	
CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300			PENG, CHARLIE YU	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/767,199	DOWNING ET AL.	
	Examiner	Art Unit	
	Charlie Peng	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

In paragraph [0017], line 7, the applicant stated the coatings are applied whereby it allows light to pass directly through the diode structure without heating up the surfaces". The light outputted by lasers may not be substantially heating up the surfaces as it passes through, but it must be heating up the surfaces at least a small amount. This is common knowledge to one of ordinary skill in the art, and this is further supported by the fact that applicant included a heat sink (Fig. 5A, Fig. 5B and [0017]) in designing the laser diode system as claimed.

Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-16 are provisionally rejected under the judicially created doctrine of double patenting over claims 1, 2, 6-9, 12-16, 18, 30, 32-34, and 37 of copending Application No. 10/948,757. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: at least two laser diodes with reflective coatings, and the laser diodes being arranged coaxially on a support structure.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

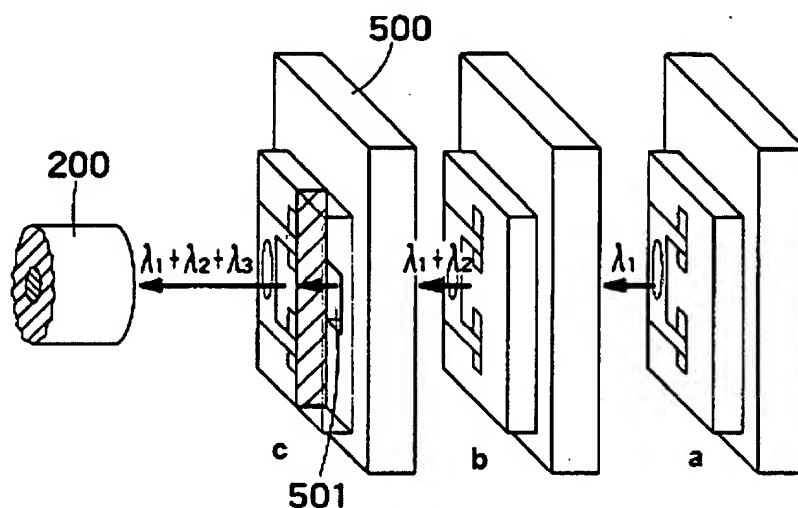
Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-8, 11-13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,081,636 to Kinoshita. Kinoshita teach a plurality of laser elements **a, b, c** arranged coaxially and substantially abutting; the laser elements, having different periods of diffraction gratings to oscillate at different wavelengths λ_1 , λ_2 , λ_3 , respectively, are arranged coaxially with output light and collectively coupled to a fiber 200 by laser c; each laser element is formed on a heat sink **500**; and anti-reflective coatings 6' (an AR coating merely reduces reflection, i.e. by destructive interference, and not completely eliminate reflection, so an AR coating is still a reflective coating to a range of frequency or wavelength) are applied on front and back surfaces of each laser element. (See at least attached Fig. 1A with additional annotations and description)

Kinoshita does not teach the laser elements **a, b, c** to be placed on a common support substrate. However, in a separate embodiment as illustrated by Fig. 3, Kinoshita places three laser elements emitting light of different wavelengths on a single support **1**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place all the laser elements on a single support layer. The motivation would be to provide compact arrangement of lasers and reduce the size and the number of the optical components used.

**FIG. 1A**

With specific reference to claim 4, since the three diode lasers **a**, **b**, **c** share one output facet of the laser **c**, their output diffraction properties are based solely on the output facet of the laser **c** and therefore identical.

With specific reference to claim 5, Fabry-Perot lasers, which are the most common type of laser, has two reflective coatings on its two end faces (or faces of an amplifying medium) in order to create Fabry-Perot cavity laser oscillator. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Fabry-Perot lasers with coating on its front and back facets for the invention by Kinoshita. The motivation would be the ease of manufacturing based on existing knowledge.

With specific reference to claim 6, broad area emitter laser is a common laser diode having a larger emitter width (as compared to a Fabry-Perot laser) well known in the art. (See conclusion for relevant art.) It would have been obvious to one of ordinary

Art Unit: 2883

skill in the art at the time the invention was made to use a series of broad area lasers in Kinoshita's invention. The motivation would be the need for a high power diode laser.

With specific reference to claim 7, the applicant claims a method of using the coaxial diode lasers. However, all the limitations are met by the Kinoshita reference and the applicant is merely stating the most obvious and logical method using the lasers. The claim is also rejected.

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita. Kinoshita teach a series of coaxial lasers outputting different wavelengths except for the lasers being placed on a heat sink support and method of using the same. Kinoshita does not specifically state the coatings having narrow band reflectivity. However, Kinoshita teaches, in reviewing of prior art, a $\lambda/4$ shift DFB laser having coatings 116 on both surfaces to prevent reflection to oscillate at the Bragg wavelength at the center of a stop band as shown in Fig. 8B, wherein the "stop band" pertains to a state where transmitted light is minimized and most of the light is reflected, i.e., the same concept as "narrow band". (See at least Fig. 8B and description) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the DFB laser in Kinoshita's invention. The motivation would be to use the AR coating and prevent an optical loss or interference to laser elements by any undesirable reflection.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita and in view of U.S. PGPub 2002/0122454 to Nasu et al. Kinoshita teaches multiple coaxial laser diodes being fixed on a heat sink except for a hermetic casing for the

Art Unit: 2883

lasers. Nasu et al. teach a laser diode **31** with a heat sink **33** sealed in an air-tight package **35**, and such a method is also admittedly known in the art by the applicant.

([0003]) It would have been obvious to one of ordinary skill in the art at the time the invention was made to place the invention in a hermetic casing. The motivation would be to reduce contamination and extend life time of the product.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita in view of U.S. Patent 6,636,339 to Lee. Kinoshita teach the coaxial diode lasers except for their application in a scanner or MEMS display. Lee teaches a MEMS scanner that uses lasers of multiple and differing colors as light source **10** (i.e. lasers of multiple and differing wavelengths), and the MEMS scanner can be implemented as image projector for a laser TV display. (See at least Fig. 2-8 and description) It would have been obvious to one of ordinary skill in the art at the time the invention was made to used the coaxial diode lasers with multiple wavelengths as a light source for Lee's invention. The motivation would be to provide compact arrangement of lasers and reduce the size and the number of the optical components used.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,430,748 to MacCormack et al., on a linear array of broad area lasers;

U.S. Patent 6,201,824 to Hong et al., which also reads on the independent claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charlie Peng whose telephone number is (571) 272-2177. The examiner can normally be reached on 9 am - 6 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charlie Peng
Charlie.Peng@uspto.gov
August 3, 2005


Frank G. Font
Supervisory Patent Examiner
Technology Center 2800